

BI-DIRECTIONAL MULTI-PORT INVERTER WITH HIGH FREQUENCY LINK TRANS- FORMER

Abstract

This invention is a multi-port power converter where all ports are coupled through different windings of a high frequency transformer. Two or more, and typically all, ports have synchronized switching elements to allow the use of a high frequency transformer. This concept and type of converter is known. This invention mitigates a number of limitations in the present art and adds new capabilities that will allow applications to be served that would otherwise not have been practical. A novel circuit topology for a four-quadrant AC port is disclosed. A novel circuit topology for a unidirectional DC port with voltage boost capabilities is disclosed. A novel circuit topology for a unidirectional DC port with voltage buck capabilities is disclosed. A novel circuit for a high efficiency, high frequency, bi-directional, AC semiconductor switch is also disclosed.